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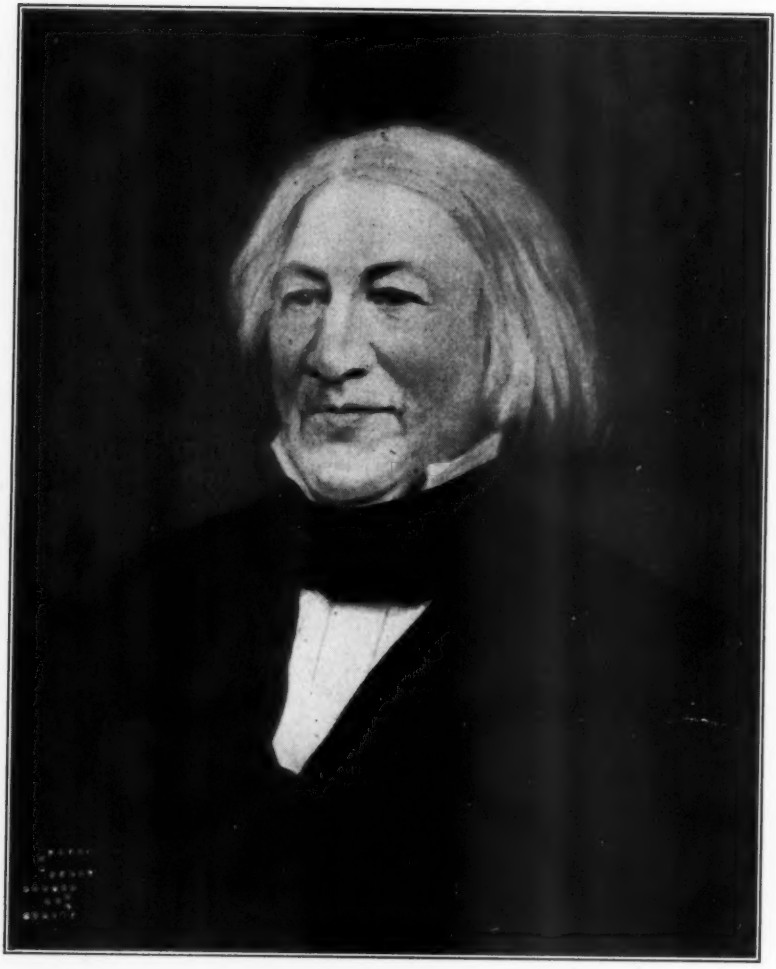


Dr. Samuel Jackson
1787–1872

THE AMERICAN
JOURNAL OF PHARMACY

SEPTEMBER, 1916

SOME OF THE EARLY TEACHERS IN PHARMACOGNOSY IN AMERICA.

By HENRY KRAEMER.

I have been surprised, in looking over the files of the AMERICAN JOURNAL OF PHARMACY, that there should not be a more or less detailed and complete account of the rise and development of Pharmacognosy in the United States. Furthermore, very few biographical notices of the great leaders in this subject that have been published give us any true concept of their work. I have been interested recently in gathering together such information as is available concerning the early teachers in Pharmacognosy, and have felt that it would be worth while publishing the facts. Carlyle has truly said that the history of any nation can be written from the biography of its great men. This is not only true of nations but of institutions and the subjects which comprise the special activities of man. Nearly all of the leaders in Pharmacognosy have been connected at one time or another with the Philadelphia College of Pharmacy. In the Museum of the College there is fortunately a splendid collection of oil-paintings which gives us some idea of the personality of these men. It is especially noteworthy that a number of them should have attained great renown while they were connected with the Philadelphia College of Pharmacy, and it is here that they gained their experiences and earned their reputations. It was customary in the earlier days of the college to select medical men for the Faculty, as it was said " that the pharmacists had none in their ranks to accept such important positions." It was not until the College was in existence for about fifty years that the Faculty included a number of successful teachers who were trained as retail pharmacists. This condition had not only a marked influence on the teaching in pharmacy in the United States but also on the

work of the United States Pharmacopœia. It is well known that in the earlier editions of the U. S. Pharmacopœia the medical profession took a very great interest, and their members were active in the preparation of the text. This was later changed, due to a notable incident which occurred in connection with the 1840 revision of the U. S. Pharmacopœia. The Committee of Revision had prepared their report and it was ready by October, 1840, but concluded to defer all action until the Philadelphia College of Pharmacy should present their report. This communication was sent to them near the end of the year 1841, and the preface to the Pharmacopœia of 1840 refers to it as follows: "A committee of that body (the College of Pharmacy), charged with the work of revision, had, in the meantime, been zealously engaged in prosecuting the object of their appointment, and the result of their labors, having received the sanction of the College, was transmitted to the committee of the convention. This contribution from the Philadelphia College of Pharmacy consisted of a revised copy of the Pharmacopœia, elaborated with ability and great industry, and presenting, along with numerous individual additions and alterations, some new features in the general plan. It, therefore, required close attention and deliberate examination on the part of the committee, who found themselves under the necessity of going over the whole ground which they had recently traversed." From this time on the Colleges of Pharmacy were invited to send delegates to the U. S. Pharmacopœial conventions, and pharmacists were given a larger share of the work.

Dr. Samuel Jackson.

The Philadelphia College of Pharmacy was instituted on February 23, 1821, and the first Faculty, elected on April 23, consisted of but two professors, one of whom was Samuel Jackson, M.D., who occupied the Chair of Materia Medica and Pharmacy. In the first introductory lecture delivered at the College, and entitled "Conditions of Medicine in the United States, and the Means to Their Reform," Doctor Jackson struck the key-note to the situation. Could his ideals have been realized in part, and had the pharmacists of the United States consistently adhered to the principle laid down by him, conditions in pharmacy would have been very different from what they are to-day. We would not have felt, after the lapse of nearly a century, the necessity of reconstructing the practice of

pharmacy to meet the needs of the public health. Doctor Jackson said: "The ultimate success of the Philadelphia College of Pharmacy must rest with the public and the physicians of the city and country. It must look to their patronage to crown its efforts. A determination on their part to limit all their business to the members of the College —to send prescriptions and purchase their supplies of those only who have made themselves amenable to its laws and act under its supervision and warranty—is all that is requisite to perfect the only plan by which in this country the secret and hidden danger of an unregulated and neglected pharmacy can be avoided. It is the vital spring that will give energy, movement, power, action, and permanency to the whole machine. A member of the College is not only under the common influence of conscientious motives and regard to his character, but he is under the government of artificial restraints. Liable to an accusation and trial for unfaithfulness in his business, expulsion would destroy his prospects, if the suggestions I recommended were generally adopted. He would then not hazard the danger, and the physician and patient could both rely on the exact observance of a prescription, and on the purity and good quality of the medicine administered or purchased."

Doctor Jackson was one of the most eminent practitioners and lecturers on medicine of his time, and this probably accounts for the fact that his life as also his work in the Philadelphia College of Pharmacy seems to have been overlooked. Fortunately, however, Prof. Joseph Carson wrote a discourse commemorative of the life and character of Doctor Jackson. This address was delivered before the trustees, professors, and students of the Univeristy of Pennsylvania, and subsequently published at the request of the medical students of the Univeristy. A copy of this address is in the library of the American Philosophical Society, and it is from this account that I present the facts concerning the life of this truly remarkable man.

Dr. Samuel Jackson was born in the city of Philadelphia, March 22, 1787. He acquired a classical education at the University of Pennsylvania, but does not appear to have taken any literary degree. He later studied medicine and received the degree of Doctor of Medicine from the University. After his graduation Doctor Jackson did not enter upon the practice of his profession. His father had been engaged in the business as a druggist and pharmaceutist, and, after his death in 1801, its continuance devolved on his eldest son. Upon

the death of his brother, in 1809, Doctor Jackson continued the business, rendered necessary by the dependent state of the family. The details of trade, however, were never congenial to the tastes of Professor Jackson; he was clearly unadapted to such pursuits, and his aspirations took another direction. As soon as he could do so he abandoned the occupation of a pharmacist, and became a candidate for practice in the medical profession. To his credit it may be stated that when he retired from business, being deeply involved pecuniarily, he regarded all his obligations with a sense of honor, and subsequently liquidated them from his professional earnings, with principal and interest.

While engaged in business pursuits, the War of 1812 with Great Britain was declared. He manifested his patriotism by joining the "First Troop of City Cavalry," and with it took part in the advanced movements of the troops then raised to protect the city of Philadelphia from invasion by the British. In the autumn and early portion of the winter of 1814 he was occupied at Mount Bull, in Maryland, in watching the movements of the enemy, then in the waters of the Chesapeake, or in riding as a vidette between that post and the city. After the war had terminated, and peace had been declared in 1815, Dr. Jackson closed his business concerns, and by so doing placed himself on a footing with his compeers and brother practitioners in his native city.

Doctor Jackson had a public-spirited mind, and was interested in public health work. He became a member of the Board of Health of Philadelphia, and in 1820 was its president. His services in connection with the study and final suppression of the yellow fever epidemic in 1820 has become a part of the history of our knowledge and control of this disease. As has been already stated, Doctor Jackson was one of the first professors of the Philadelphia College of Pharmacy. During his first year he was associated with Dr. Gerard Troost, who held the Chair of Chemistry but one year, being followed by Dr. George B. Wood. This association with the latter is worthy of note, when it is recalled that Professors Wood and Jackson, in subsequent years, during a full quarter of a century, were colleagues in the University of Pennsylvania. The selection of Doctor Jackson to fill the Chair of Materia Medica in the College evidently depended on the estimate of his fitness from his former connection with the pharmaceutic profession, the deep interest he took in the success of the institution, and his share in organizing it.

He was the link, as it were, between the two professions, and from early training was supposed to be perfectly conversant with the requirements of each of them. That this was the case is evident from the whole tenor of the Introductory Lecture that he delivered upon entering on his duties.

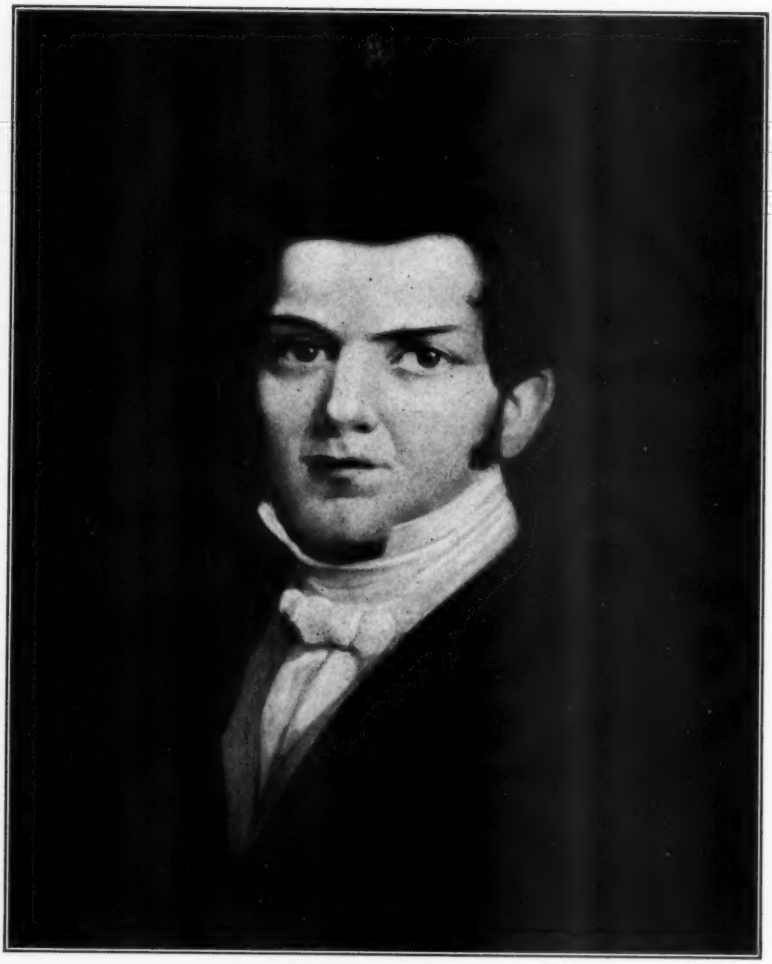
At the period when the Philadelphia College of Pharmacy was organized the pharmaceutical profession was at a low ebb, not only in the city of Philadelphia but in the United States. When speaking of its condition, in the lecture referred to, he makes this bold and candid declaration: "As respects drugs and medicines, this country, for the last thirty years, has been retrograding rather than advancing. Abandoned by physicians, pharmacology has not been prosecuted as a science by the druggists and apothecaries; no means of instruction were provided for these last, no rules or regulations established for their government in order to insure a correct dispensation of medicines of the most improved and genuine qualities. Individuals engaged in the vocation of an apothecary and druggist without a previous acquaintance with medicines, ignorant of their properties, unconscious of their responsibility and of the fatal effects which might result from their conduct; anxious to transact business, they have sought to attract customers by the lowness of their prices. Their successes compelled others to come down to the same standard, and thus, by succesive competition, our drugs and medicines are cheaper than those of Europe, but are deteriorated in the same proportion." But this condition of things was not solely due to the pharmaceutist. "The great body of practitioners, especially those residing in the country, knowing medicines only by their names, have been ignorant of the very different qualities subsisting among them. In their purchases, incapable of making a selection as to quality, the lowest price was preferred. Inferior, deteriorated, and sophisticated medicines and drugs met with ready sale, while the choicest and most select, because of higher price, could very seldom meet with a purchaser."

The disheartening picture here presented has been erased, and that such would be the case was predicted by the lecturer. His words were prophetic: "In the United States, pharmacology is a new science. Long repudiated from medical instruction, too feeble to assert its claims, neglected, and almost forgotten by its more brilliant sister sciences, it has pined in penury and obscurity. This reproach and stain upon the medicine of our country will soon be

effaced. For proof that this anticipation has been realized, we may proudly survey the present condition of this department throughout the length and breadth of our extended country. The influence of the Philadelphia College of Pharmacy, through its instruction and through its JOURNAL, has been felt in every quarter. It was the pioneer; and other colleges of similar organization have sprung up, in imitation, at the great centres of wealth and population. The people have been instructed as regards their utility and importance. Coöperation has been effected, and an association among pharmaceutists has been created—the 'American Pharmaceutical Association'—which is eminently useful. A Pharmacopœia, whose origin was coeval with the College of Pharmacy, and in which the pharmaceutists are as much interested as are medical men, has become the national standard. Our pharmaceutists may now be ranked among the best instructed of the world.

"To whom may be attributed the early planting and nourishment of this intellectual germ which has yielded so plentifully, and has been of such incalculable benefit to the community? The record shows that this was due to the talents, learning, energy, and industry of two members of the medical profession, both subsequently professors in the University of Pennsylvania, Samuel Jackson and George B. Wood; and, further, for the first twenty-five years in the history of the College the duty of instructing its pupils was intrusted to members of the same profession. I wish not to derogate from the merit of those enlightened druggists and apothecaries who were coadjutors in the work of founding the College of Pharmacy. They well appreciated the abilities of those who only at the time could subserve their purpose of instruction, and nobly supported them until eminent members of their own profession arose to carry on the enterprise so happily inaugurated."

While holding the Chair of Materia Medica and Pharmacy in the Philadelphia College of Pharmacy, Doctor Jackson joined the association which was organized by Doctor Chapman for the instruction of the pupils of the University of Pennsylvania, who remained in the city during the recess between the public course of lectures. So many subjects claimed the attention of Doctor Jackson that he resigned his position at the Philadelphia College of Pharmacy on May 24, 1827. From this time on he devoted all of his energies to the practice of medicine, and contributed much to the advancement of medicine, becoming connected with the University of Pennsyl-



Benjamin Ellis
1798–1831

vania and devoting much of his time as one of the attending physicians of the Philadelphia Almshouse. He was for 36 years connected with the University of Pennsylvania, and for 28 years was a full professor. He died April 4, 1872, at the age of 85. He played a conspicuous part in the development of medical education, and his whole-souled devotion to public health work has linked his name with that of the greatest medical men of his time. He was the author of many original papers and addresses; most of these were on medical subjects. There is one, however, which is published in the JOURNAL OF THE PHILADELPHIA COLLEGE OF PHARMACY for May, 1826, on "James's Fever Powders." The introductory lecture which he delivered in the Philadelphia College of Pharmacy on "Conditions of Medicine in the United States, and the Means to Their Reform" was published in the *Philadelphia Journal of the Medical and Physical Sciences,* vol. v, No. 2, 1822.

Doctor Jackson's name is connected with three preparations which were used as popular remedies, *viz.,* Jackson's Pectoral Syrup; Jackson's Ammonia Lozenges; and Jackson's Pectoral and Ammonia Lozenges. The original formulæ are given in the AMERICAN JOURNAL OF PHARMACY, 1852, pp. 34–36. Doctor Jackson's name is also connected with an iodine solution called "Lugol's Diluted or Jackson's Iodine Solution," which is quite similar to the compound solution of iodine now official (AMER. JOUR. PHARM., 1834, p. 116). At one time there was largely used a "dissolving salve for breasts" which is made according to a formula devised by Professor Jackson (*Ibid.,* 1864, p. 116).

DR. BENJAMIN ELLIS.

Benjamin Ellis, who succeeded Doctor Jackson, was elected Professor of Materia Medica on June 25, 1827. He was one of the originators of the AMERICAN JOURNAL OF PHARMACY, and was the editor when its original publication began in 1829.

He gave every evidence of a very promising career and was cut off in the flower of life, dying at the age of 33. There is an excellent biographical sketch of him in the AMERICAN JOURNAL OF PHARMACY of 1831, p. 345. The sketch was prepared by Dr. E. H. Coates and read before the Philadelphia Kappa Lambda Society. Dr. Benjamin Ellis was born in Muncy, Pennsylvania, May 5, 1798. His early education was in strict conformity with the opinions of the religious Society of Friends. Part of his early education was

obtained in the seminary at Manhattanville, near New York. He seems to have been especially interested in the languages and in the study of chemistry. Very early in his career he established a reputation as being proficient in materia medica, and he then became interested in medicine and obtained his degree at the University of Pennsylvania. He gave four courses of lectures in Materia Medica at the College of Pharmacy, and contributed a number of articles to the AMERICAN JOURNAL OF PHARMACY. These articles did not show any great originality, as they were mostly translations from foreign sources. Some of these contributions, as on Rhubarb, Chinese Materia Medica, and Liriodendron Tulipifera, are even to-day worthy of examination. His most important work, however, was in connection with the AMERICAN JOURNAL OF PHARMACY. The first venture, from 1825 to 1829, was not very successful, but Professor Ellis was very earnest and persevering in his efforts for the continuation of the JOURNAL, and the results of his able editorship are seen throughout those early numbers. Doctor Ellis was not a strong man physically, and yet his life was marked by unwearying and presevering industry. He was a man of fine character, and just the type of man to help establish an institution such as ours. He found time to write a medical formulary, which was the most successful of the works of this nature that have ever been published in the United States. It ran through eleven editions, the last being edited by Professor Thomas, in 1864, a few weeks prior to his death.

The following papers were published by Professor Ellis in the AMERICAN JOURNAL OF PHARMACY.

"The Price and Consumption of Opium," November, 1827, p. 110.

"Seidlitz Powders," September, 1827, p. 81.

"Chinese Materia Medica," 1830, p. 150.

"On Weights and Measures," 1831, p. 111 and p. 188.

"On the Liriodendron Tulipifera, American Poplar or Tulip Tree," 1831, p. 11.

PROFESSOR GEORGE B. WOOD.

Dr. George B. Wood was the third Professor of Materia Medica. He was the uncle of our distinguished honorary member, Dr. Horatio C. Wood. Doctor Wood was Professor in Chemistry from 1822 to 1831, prior to his transfer to the Chair of Materia Medica, to which he was elected on May 24, 1831. He is conspicuous for his work with Doctor Bache on the United States Dispensatory and

Dr. George B. Wood
1797–1879

for his services during four decades and five revisions of the United States Pharmacopœia, he being a member of the first pharmacopœial convention. In a memoir of Doctor Wood which was read before the American Philosophical Society, October 11, 1880, Doctor Hartshorne pays this tribute to him. He says: "With a long life, not much varied in events, nor brilliant in deeds that meet the public eye, Dr. George B. Wood may be named as one who, in the main features, and, indeed, in almost every particular of his career, has left an example worthy of admiration and emulation. It will be acknowledged by the least enthusiastic of his friends and associates that he was one of the most useful men of his generation." He was born in Greenwich, Cumberland County, N. J., March 13, 1797. His parents were Friends. His early education was obtained in New York, but was completed at the University of Pennsylvania, where he was graduated with honors in 1815. He wrote, between 1813 and 1825, many verses, mostly in English, some in Latin—among the former several translations from the German of Schiller. He even planned and wrote the greater part of a novel which, however, was never published. Soon after graduating from the University, he studied medicine under Dr. Joseph Parrish and graduated in medicine, receiving his degree in 1818. With Doctor Parrish he developed a private medical school, and it was here that he matured those convictions upon practical medicine and medical ethics which he inculcated through his whole life, and it has been said that no man prior to his time did so much to form and influence medical opinion in America upon both practical and ethical questions.

He was an earnest student and became one of the most eloquent and successful lecturers of his time. It is said that these qualities were not due to any natural gift, but rather to assiduous study and cultivation of his powers.

As has already been stated, he first became associated with our College in 1822 as Professor of Chemistry. His knowledge of many subjects was such that he might easily have filled with distinction any number of other positions. It was but natural, because of his interests in therapeutics, that he should have made for himself a reputation in materia medica. His articles on the history of materia medica, and especially of this subject in the United States, are very important contributions to our knowledge of the uses of drugs. His addresses at the Philadelphia College of Pharmacy, two of which were published, are of exemplary character. I have a volume of

nearly 500 pages devoted entirely to the lectures and addresses on pharmaceutical and medical subjects delivered by Doctor Wood.

During the time that Doctor Wood was connected with our College he laid the foundation and developed some of his most important work. His labors on the Pharmacopœia were most unselfish. He himself stated that in 1829 he devoted all of his leisure for nine months, in connection with his colleagues comprised in a special committee of the College of Physicians of Philadelphia, in revising the Pharmacopœia of the United States. So many alterations were found to be required that it was necessary to rewrite almost the whole work. Before the committee was satisfied, Doctor Wood had written almost all of the manuscript copy at least twice over with his own hand. The thoroughness of this work was largely due to Doctor Wood, and his personality had much to do with its being adopted as the standard authority throughout the United States. It was but natural for one who had been so painstaking in this work to see the possibility and desirability of an elaborate commentary on the Pharmacopœia. Soon after the Pharmacopœia of 1830 was published Doctor Wood, in conjunction with Prof. Franklin Bache and aided for a time by Daniel B. Smith, then president of the Philadelphia College of Pharmacy, worked upon the United States Dispensatory. This volume of more than 1000 pages was begun and finished by its authors in less than two years. This has been the most successful work on pharmacy published in the United States. During the next fifty years of Doctor Wood's life it ran through 14 large editions, and it is estimated that 120,000 copies were sold. The publication of this work and its success are the most interesting chapters in the literature of the medical and pharmaceutical profession. While Doctor Wood was connected with the University of Pennsylvania, his associate, Professor Bache, was connected with a rival medical institution, Jefferson Medical College of Philadelphia. It reveals not only a breadth of mind of these two authors but their great characters in uniting for a common purpose to supply their profession with the best information available. It is very doubtful if the later editions of this work have commanded the esteem and accomplished what the earlier revisions did for the combined professions.

In 1835, Doctor Wood was elected to the Chair of Materia Medica and Pharmacy in the Medical Department of the University of Pennsylvania and resigned his position in the Philadelphia College

of Pharmacy. It was here that the fruits of his earlier life were ripened, and it was from this time on to its close that he reached the culmination of his reputation as a teacher. Doctor Wood revolutionized the method of teaching during his time. His courses of lectures upon Materia Medica may be truly said to have been splendid, almost magnificent; adorned as well as made complete for the students' information by the exhibition from day to day of living specimens of medicinal plants from all quarters of the world, grown in his own private conservatory and botanical garden maintained for this special purpose. When such at the time could not be obtained, fine pictorial representations were placed before the class in their stead; and his cabinet of mineral and other crude and prepared specimens was correspondingly complete. A printed syllabus of the course of lectures, interleaved for note-taking, was furnished gratuitously by him to each student. It may be said, indeed, that no portion of the curriculum of the Medical Department of the University, able and renowned as have been the other members of its Faculty, ever added more to the great reputation and the large classes of that institution, than this model course. Doctor Wood continued to hold the Chair of Materia Medica and Therapeutics until 1850, when he was transferred to that of the Theory and Practice of Medicine, upon the retirement from the latter of Prof. Nathaniel Chapman. This chair he retained until 1860, when he withdrew from all active labors. During the remaining twenty years of his life he devoted his energies for the benefit of his profession and his fellows. In 1859 he was elected president of the American Philosophical Society, which position, with that of the presidency of the College of Physicians and Surgeons, he held until the time of his death, in 1879. Doctor Wood's mental outlook was far from being narrow or in any sense restricted to matters connected with his own profession. He was earnestly and actively interested for several years in the establishment of Girard College according to the designs of its endowment. He became interested in the Temperance Reform, and contributed to the *United States Review* an article of about fifty pages on the temperance cause. He also wrote an article on the "History of Christianity in India"; this was part of a larger plan of his to write a work on the history of India. He conducted a number of agricultural experiments. At his farm at Greenwich he spent several years in experimenting on the fertilizing and renewing action of potassium on the growth of fruit-trees,

potatoes, wheat, and other plants. The addition of wood ashes empirically to certain soils under cultivation has long been a common practice in many places. By the chemical analysis of plants and of the earth in which they grow, as Doctor Wood mentions, their mutual physiological relations, especially since the investigations of Liebig, have been generally understood. But the merit of Doctor Wood's observations is that they have furnished means of definite experimental demonstration, upon a considerable scale, of the practical application of this part of the chemical physiology of plants, in a manner productive of direct agricultural and horticultural profit.

Doctor Wood was a remarkable man and one of the most influential of his time in Philadelphia. In person he was rather tall; until the last few years of his life slender, and his features were regular, though not striking; he wore a peruke and no beard. He was always dressed in black, and very neatly. His manners were dignified and formal; his whole appearance grave and sedate. To strangers and those of slight acquaintance he seemed rather to repel approach, and to produce a feeling of constraint. Among intimate friends, however, in social intercourse, this severity was relaxed; so that, although never demonstrative, he was quite affable, and at times genial. As Doctor Packard describes him, in his brief biological sketch, "Whoever learned to know him found in him a faithful friend, a judicious counsellor, and a true man." His uniform courtesy entitled him to be designated, as he was at the dinner given to him by the profession in 1860, "the model gentleman." Using again some of the words of Doctor Littell, "His purity was that of the snow or lily; and no one in his presence ever ventured to indulge in ribald jest or unseemly remark." His conversation was agreeable and often very instructive, though not brilliant. Doctor Hartshorne says that "twice only, in very frequent professional and social intercourse, did I hear him utter a facetious remark; and then it was rather the dry wit which brings a smile than the humor which compels laughter." One of Doctor Wood's early formed habits, not uncommon, perhaps, with toilsome authors, was that of doing most of his literary work late at night. From ten o'clock until two, three, or four in the morning were his usual hours for such employment. So inveterate did this become, as a "second nature" with him, that when in advanced age he laid his pen almost entirely aside, he found it impossible to return to ordinary hours. He was

still obliged, almost to the last, to turn night into day, and day into the time of his repose. Doctor Wood was benevolent, giving to both public and private institutions. He gave liberally to the University of Pennsylvania, The Pennsylvania Hospital, College of Physicians, The American Philosophical Society, and the Academy of Natural Sciences, and several of these institutions became principal legatees of his wealth. He was honored by being made either honorary or corresponding member of a number of societies in this country and abroad. In 1848, as a delegate to the meeting of the British Medical Association, he was received with unusual distinction. "When his credentials were read, complimentary resolutions were passed and the whole assembly rose to greet him, as the accredited and honored representative of his profession in America. During his last visit to England, in 1861, appropriate official and social courtesies were extended to him, as president of the American Philosophical Society, and of the College of Physicians of Philadelphia, by the officers and members of the Royal Society and of the College of Surgeons and Physicians in London." The record of Doctor Wood's life is fascinating and reads like a novel. He enriched his profession by his wonderful powers of exposition. He contributed nothing which was new to his science, and left nothing of a permanent character that the student of research could point to as a step or landmark in the development of science. As we scan the biographies of men, they may be divided into two classes: the ones who influence their immediate environment and whose character is appreciated by those who come in contact with them. There is a second class, viz., those who are able to penetrate deep into nature's secrets and find out her laws; it is the latter who are the great masters of knowledge and whose character is appreciated by the world's greatest souls in every clime and for all time. It is no disparagement to Doctor Wood to say that he belonged to the former class, in which are enrolled many men who have enriched the world by their dissemination of the knowledge which has been hewn out of nature by others.

There is a story which concerns Doctor Wood as related by Professor Minot in his lecture on Joseph Leidy. The authenticity of this we cannot vouch for, for as a young man I recall how the same story was told in which the name of Dr. William Pepper, then the eminent provost of the University, was substituted for that of Doctor Wood. It would seem to be a kind of a tale of the street

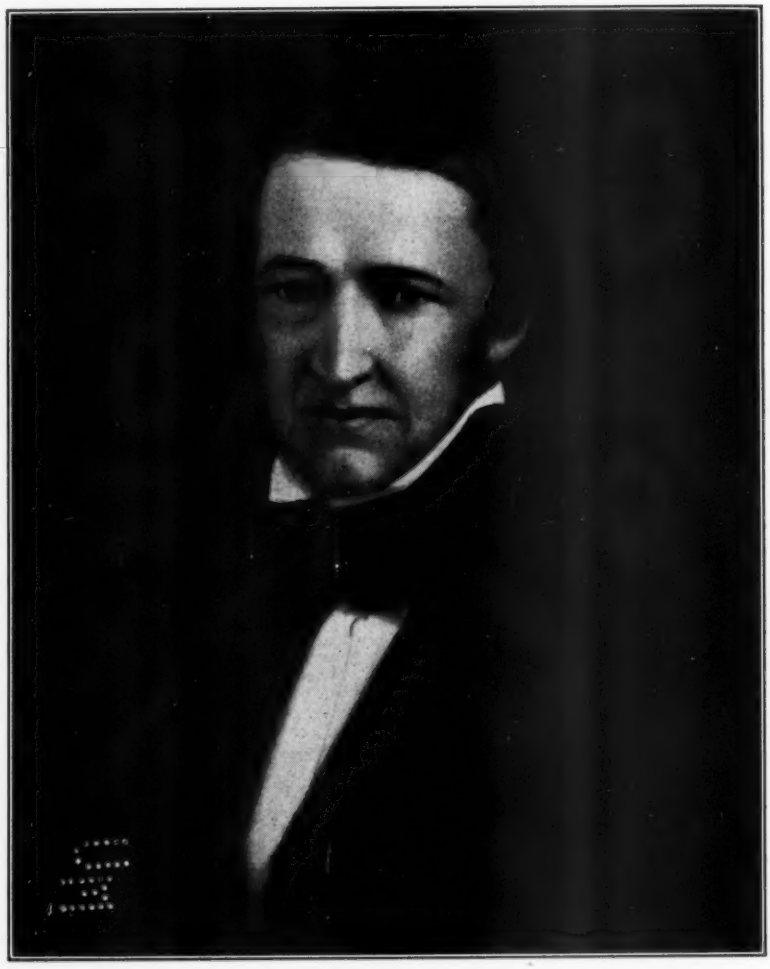
which could be used effectively to belittle the influence of a useful member of society rather than add to the reputation of the great scientist Leidy. The story, as told by Prof. Minot (*Science*, May 30, 1913, p. 813), is an incident which happened when Doctor Wood is said to have taken with him, on one of his European trips, Dr. Joseph Leidy, Philadelphia's greatest scientist and one of the world's greatest men. Doctor Wood possessed all of the credentials of the learned societies of Philadelphia, and, as he was anxious to collect materials to illustrate his lectures, had no hesitation in calling upon many of Europe's most eminent men. In conjunction with Dr. Leidy, Dr. Wood called on Prof. Johannes Müller, one of the world's greatest physiologists. It is said that Doctor Wood found it difficult to overcome Doctor Leidy's modesty in sending up his card to Professor Müller. He did so, however, and when Müller came into the room he asked, "Which is Leidy?"

Dr. Wood died on March 30, 1879, at the age of 82. According to Dr. Littel, "his remains, followed by a long train of sorrowing friends, were silently interred at Laurel Hill as the manner of Friends is to bury. Not a word was uttered, not a note was heard, either at the house or at the grave. All instinctively felt that fulsome panegyric or trite remark would be alike out of place on such an occasion. They came 'to bury Cæsar, not to praise him.' But though no religious rite was observed, no comforting service performed, those who were present felt none the less deeply that the object of their love and veneration—the Christian gentleman, the representative physician, the knight of stainless record—had been gathered to his fathers after a well-spent life, ripe with years and honors, 'in the confidence of a certain faith, in the comfort of a reasonable, religious, and holy hope, in favor with God, and in perfect charity with the world.'"

As has already been stated, Doctor Wood's writings were voluminous; though relatively few of his papers were published in the AMERICAN JOURNAL OF PHARMACY. Of the latter the following may be mentioned.

"Dissertation upon the Subject of Peruvian Bark," 1831, pp. 22, 96.

"Observations on Certain Preparations in the Pharmacopœia of the United States," 1831, pp. 200, 292; 1832, p. 94.



DR. ROBERT E. GRIFFITH
1797–1850

"Introductory Lecture to the Course on Materia Medica and Pharmacy in the University of Pennsylvania," session 1835–'36, 1835, p. 286.

"Introductory Lecture to the Course of Materia Medica in the University of Pennsylvania," 1840, p. 298.

"On the Preparation of Mercurial Ointment," 1852, p. 111.

Prof. Robert E. Griffith.

Robert Egglesfield Griffith was the fourth teacher of Pharmacognosy. He held the chair but for one year and delivered a course of lectures during the term of 1835–'36. His work in connection with the College extended over a longer period, as upon the death of Dr. Benjamin Ellis he assumed the editorship of our Journal, and it was during this time, by reason of his original papers on medicinal plants, he made a reputation for the Journal which it still maintains. During these five or six years he published nearly 90 articles in the American Journal of Pharmacy, a record that has never been equalled or surpassed by any one connected with the College. He resigned his position at our College in 1836 to accept a similar position in the University of Maryland. He stayed there only a few years, accepting a position in the University of Virginia. On account of ill health he was compelled to relinquish his University work, and went to the West Indies. He returned to the United States and occupied himself with experimental agriculture near Baltimore. He afterwards returned to Philadelphia and devoted himself to literary pursuits, chiefly of a medical and botanical character. During this period "Griffith's Medical Botany" and "Griffith's Universal Formulary," both original works, issued from his pen, and several foreign works were republished here under his supervision, the most prominent of which was "Dr. Christison's Materia Medica." I should like to refer to this work on medical botany of Doctor Griffith's. It comprises nearly 700 pages and is dedicated to Torrey and Gray, with whom he had a lasting friendship. At this time there was no book of an authoritative character which was in general use. The works of Bigelow and Barton on vegetable materia medica were out of print, while the "Medical Flora" or Rafanesque contained a number of misleading statements. It is true that there were a number of other works that attempted to supply this deficiency, but none of them were based on botanical

principles and especially intended to elucidate the vegetable materia medica. The basis of this work was no doubt laid while he was connected with the Philadelphia College of Pharmacy. The work is quite well illustrated with line drawings, and contains much valuable information on the characteristics of drugs and the plants yielding them. It is not a compilation, but the product of a master mind. On every page there is revealed careful work, and it is a credit to the author.

"Griffith's Universal Formulary" was a compendious collection of formulæ and pharmaceutical processes. While not the first one to be prepared,—the first being the work of Dr. Benjamin Ellis—it was very successful, and was later edited by Thomas and Maisch and was for more than thirty years a standard work.

Doctor Griffith was an eminent scientist, well known for his work in conchology, and was one of the vice-presidents of the Academy of Natural Sciences. He had a true scientific mind and may be considered the pioneer in American Pharmacognosy. He numbered among his friends not only the foremost minds in America but many of the learned men of Europe. His mind was a vast storehouse of knowledge; he was a close observer and most indefatigable student. He had a very retentive memory, and his information was accurate on every occasion. He was always ready to assist his colleagues in their studies, and rendered any possible assistance to further the cause of science. He died in the prime of life, at the age of 53.

Doctor Griffith was a voluminous writer of not only original articles but of current literature. He was well informed on a large variety of subjects, and always wrote from an original point of view.

The following articles appeared in the AMERICAN JOURNAL OF PHARMACY during a period of ten years from 1831 to 1840:

"Notes on Ipecacuanha," 1831, p. 181.

"Pharmaceutical Notices," 1831, p. 196; 1832, p. 199; 1835, p. 283.

"Frasera Walteri," 1832, p. 269.

"Spigelia Marilandica," 1832, p. 2.

"Notes on Hydrocyanic Acid," 1832, p. 17.

"Geranium Maculatum," 1832, p. 89.

"Gillenia Trifoliata," 1832, p. 177.

"Cacoucia Coccinea," 1832, p. 186.

"Vegetable Emetics of the United States," 1832, p. 276.

"Note on Œnothera Biennis," 1832, p. 289.
"Acorus Calamus," 1833, p. 265.
"Medico-Botanical Notes," 1834, pp. 299, 21, 118, 199, 284; 1835, pp. 115, 187, 279; 1836, pp. 19, 101, 191.
"Vegetable Tonics of the United States," 1834, p. 284.
"Eupatorium Perfoliatum," 1834, p. 1.
"Conium Maculatum," 1835, p. 267.
"Melia Azedarach," 1836, p. 176.

(To be continued)

MEDICATED WATERS.[1]

By JOHN K. THUM, German Hospital, Philadelphia.

The Pharmacopœia contains 17 medicated waters, of which six are made from volatile oils, and five of these by triturating the volatile oil with purified talc, gradually adding the required amount of distilled water, and filtering. Medicated waters made in this manner are very unsatisfactory; for the first few days they show up fairly well, but from then on they rapidly change for the worse, so far as appearance and pleasant flavor obtain.

Now the United States Pharmacopœia does not insist that these waters must be made according to this procedure, as the following quotation clearly shows:

"The Medicated Waters, when prepared from volatile oils, are intended to be, as nearly as practicable, saturated solutions, which must be clear, and free from solid impurities. In the processes which follow, the solution of the volatile oil is facilitated by the use of purified talc; but the solution may, if preferred, be aided by replacing the purified talc by pulped or shredded filter-paper; waters may also be made by the addition of volatile oils to hot water and separation of the excess of the former, or by the distillation of the drug or volatile oil with water, if by either of these methods the finished product corresponds in all respects with official requirements."

Bitter almond water is directed to be made by dissolving the oil in distilled water by agitation and filtering through a wetted filter-paper; no mention is made of using hot water. By this method a

[1] Read at the annual meeting of the Pennsylvania Pharmaceutical Association, June, 1916.

water is obtained that looks well and retains its appearance indefinitely. Creosote water is directed to be made in the same manner, and chloroform water in a manner that is somewhat similar; in this case the procedure is as follows: Add enough chloroform to a convenient quantity of distilled water, contained in a dark, amber-colored bottle, to maintain a slight excess of the former after the contents have been repeatedly and thoroughly agitated. When required for use, pour off the needed quantity of the solution, refill the bottle with distilled water, and saturate it by thorough agitation, taking care that there be always an excess of chloroform present.

In 1913 the writer presented a paper in which he advocated the making of camphor water by agitating small pieces of camphor with distilled water in a bottle and replenishing the dispensing bottle by pouring through a piece of gauze tied over the neck of the stock bottle. He is still wedded to that method of making camphor water. Success with this method naturally led to experiments with the other medicated waters, and it was found that fine waters, that remain clear indefinitely, can be made by simply agitating the volatile oils with distilled water and filtering through a wetted filter-paper in the same manner that the Pharmacopœia suggests in the making of bitter almond and creosote water.

The technic for this method of making waters is very simple, and is as follows: Eight mils of volatile oil are poured into a four-litre bottle and distilled water added in portions, the bottle being vigorously shaken after the addition of each portion; sufficient distilled water is then added to make up to four litres.

When the dispensing bottle requires replenishing, the stock container is well shaken and the medicated water filtered through a filter-paper.

Since making our medicated waters in this manner we have never been troubled by the development of fungi or the growth of other microörganisms. This is certainly an advantage that the practical pharmacist can appreciate, as well as the fact that his medicated waters are always clear and sightly.

The saturation of these waters can easily be determined. If to an equal part of a water a 50 per cent. solution of magnesium sulphate is added there is at once developed a distinct cloudiness.

WHY APPLICANTS FAIL TO PASS THE STATE BOARD EXAMINATIONS.[1]

By GEORGE M. BERINGER, JR., P.D., Member Board of Pharmacy, State of New Jersey.

Why do men find it difficult to pass examinations of the State Board of Pharmacy? It seems that almost every one gives a different reason. However, let us see what kind of answers the candidates give in the examinations, and we shall then be in a better position to judge the real reason.[2]

The following answers were all given in examinations in Materia Medica before the New Jersey State Board of Pharmacy during the last year:

A Rubefacient "acts on worms."

Cannabis Indica "comes from Canada."

"*E-a-r-t-a-t-e-s* the nose" is the way one candidate describes the action of a drug.

Musk comes from the "Perpetual Follicles."

Musk "is a insect."

Musk "is Sumbul."

The official title of Alum is "Alumni."

Refrigerant was defined as "preventing from getting rancid." Example: "Benzoin would be a refrigerant in Benzoinated Lard."

"Citric Acid is mined."

"The *seed* of the plant is used in making Gossypium Purificatum."

"Supernal Glands" is the way one candidate writes Suprarenal Glands.

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[1] Read before the meeting of the New Jersey Pharmaceutical Association, Long Branch, N. J., June 22, 1916.

[2] That there is a condition that is very deep-seated and antedates that connected with the time that young men and young women come up for Board of Pharmacy examinations is shown by the following answers, collated by Wilson Rogers, Baltimore, which were given to a series of questions asked of students whose ages ranged from 14 to 18 years:

There were no Christians among the early Gauls; they were mostly lawyers.

Geometry teaches us how to bisect angels.

A blizzard is the inside of a hen.

A vacuum is a large, empty space where the Pope lives.

A circle is a round, straight line with a hole in the middle.

"Troches are intended as receptacles for medicine."

"The physical difference between Paraffin and Spermaceti is that Paraffin is purer."

The official title of Diphtheria Antitoxin is "Mamalia."

"A chemical heart tonic is stomach pump and emetic."

"Digestive ferments are those substances that give off gas in the stomach, as Castor Oil."

"Two classes of plant principles used in medicine are cotyledons and dicotyledons. Example: Bark—pith and wood."

"The chief constituent of Oil of Gaultheria is resin, starch, and sugar."

"An Anthelmintic is an agent that recovers from consciousness."

The following is the wonderful effort of one candidate:

"Gum Benzoin contains Myrosin. Becomes active when heated, then it can be used as a glue."

"Rhus Glabra grows in *South America* and *tropical countries.*"

"Hydrastis grows in *South America* and *tropical countries.*"

"Acacia grows in the *United States.*"

These last three were not given by one candidate only, but by many in the same examination.

"A Cholagogue is an agent used in cases of kidney disease to act as a filtering medium when the kidneys do not."

One candidate gives the correct definition, but gives as an example Resin Cerate.

"Diaphoretic, a drug capable of retarding *flem* from *bronical* tubes. Example: Matricaria."

The official name of nutmeg is "*Mysteria.*"

Another says this drug is "odorless and tasteless."

"Honey—the official name is Mail—the source is bee combs."

"Honey—the official name is Ovis Orris, deposited by the bee."

"Honey is Mel Scrofula."

"The scientific name of the source of honey is *Glucose.*"

George Washington married Mary Curtis and in due time became the father of his country.

Sixty gallons make one hedgehog.

Georgia was founded by people who had been executed.

A mountain range is a large cook stove.

Achilles was dipped in the river Styx to make him normal.

Pompeii was destroyed by an eruption of saliva from the Vatican.

Typhoid fever is prevented by fascination.

EDITOR.

"Digitalis should be kept in tight sealed bottles because it picks up moisture from the air and it might deliquesce and become hardened."

"Digitalis should be made fresh often, as the older it gets the stronger it is."

"Cod Liver Oil is the oil taken from the bladder of the Cod-fish."

"Cod Liver Oil is obtained from the bladder of the fish."

"The official title of Cod Liver Oil is Oleum Origanum."

"Couch Grass has a *vacum* inside."

"Terebinthina Canadensis is a rhizome and root; the habitat is Europe."

"Spanish fly is *Diama.*"

"Infusion of Wild Cherry should be made with *hot* water so as to liberate all traces of *Carbon Dioxide* and to prevent the liberation of HCn."

Another candidate guesses, "It should be made with cold water to prevent from decolorizing."

"A Febrifuge destroys worms."

"A Febrifuge is a substance which chases away."

"An Antiparasitic checks up perspiration."

"An Antiparasitic prevents paralysis."

"An Antiparasitic is a drug that will reduce fever."

"An Antiparasitic is a drug relieving or preventing spasms of fits."

"The source of Cantharides is *Mosche Cantharidu.*"

"A vesicant is a mild cathartic, as Compound Licorice Powder."

"A vesicant is a drug that will serve as a vehicle."

"A vesicant is a drug that will enlarge a vessel to increase blood-pressure, as Strychnine."

"Tragacanth is Dandelion."

"Senna is a *folio.*"

"The source of Wax is *Abies* Melliferous."

"Wax is Cetaceum obtained from Spermaceti gotten from *the bone of the whale.*"

A wonderful display of knowledge on the part of one candidate follows:

"Amygdalin in the presence of Sulphuric Acid, Alcohol, and Ether produces an aldehyde, acetone, and HCN"; and he gave an equation, balanced on paper, to prove it.

Here is a candidate that surely does not need his own prescription.

In answer to a question concerning the proper base for an Ichthyol Ointment he answers: " I would recommend a 20 per cent. ointment for all ordinary purposes where reducing *information* is desired."

Where the candidate got the following is a mystery: " Two classes of plant principles are *Mamalia* and *Insecta*. A substance belonging to Mamalia is *Lard* from the *Sheep* and the *botanical* name is Ovis Aries."

" Acacia is used in Brown Mixture to keep the mixture in *suspense.*"

Here is a candidate who has a vivid impression:

" Asafetida—odor like a skunk, taste awful."

Aqua Rosæ is obtained from the *"pedestil* of the Rose—chiefly."

Tinctura Ferri Chloridi—" taste very dry."

" Flour of Sulphur is *groung* roll sulphur," is about all one candidate knew about the description of sulphur.

Another says: " Sulphur has k-n-o-w odor."

Prunum—" dose 25 of them—good help for the bowels."

Another describes prunes as " a liquid, dark red in color."

Still another gives a description and ends with, " As one might see in an Acme Tea Store."

The question was: (*a*) " Define briefly each of the underscored words in the following definition:

" ' The *concrete* milky *exudation* obtained by *incising* the unripe *capsules* of Papaver Somniferum.'

(*b*) " Why is unripe specified? "

A few of the answers are represented in the following:

" Concrete is a substance of very binding nature."

" Concrete is the *foundation* of the capsule."

" Exudation is the juice obtained from it by extracting it."

The man who gave the following is evidently a *Bible* student who became confused:

" Exudate means to be taken out of bondage."

" A capsule is a dehiscent fruit that splits and permits the seeds to come out *unsolicited.*"

" A capsule is a substance having a *vacum* which is capable of being filled by some other substance."

" Incising means exciting."

" Unripe is specified because it is of a *better nature* and yields more alkaloids."

" Cinchona is used as an *incipient* in pills."

"Two ferments of animal origin are Adeps Lanum and Adeps Lanum Hydrosus. Adeps Lanum is lard and is obtained from the fat of a hog."

"Uva Ursi is the bark of *Conden-drundum Tomentosi.*"

"Serum is Servum Antidiphtheritica obtained from the coagulated blood of a horse by separating the servum immerzed by the inoculation of Diphtheria Toxin."

"Rosa is a bulb with fleshy scales."

"Concrete saccharine exudation means the inside secretions of the *stomachic.*"

"Musk is obtained from the dried female insect."

"Moschus is Spanish flies."

"Tri-iodo-methane is Denatured Alcohol."

"Tri-iodo-methane is Sulphonethylethanum."

"The two varieties of Serpentaria official are Cinnamon and Sanguinaria."

"Bees belong to the family Ruminantia."

"Galla is from the *blatter* of Bos Taurus."

"Mel is the excreted juice of the beehive."

"Honey is Fel Bovis."

"Cantharides is found on *trees* of Cantharis vessicatoria."

"Cochineal is the *female part of the insect.*"

"Pistillate is when the *bark* of the plant contains pistils."

"Cera Alba is deposited by the *white bee.*"

"Aloes occurs in the form of a *limpid mass.*"

"Cerii Oxalas is from the intestinal juices of the ox (Bos Taurus) and the sheep (Ovis Aries)."

"Cerium Oxalate is a neutral principle from Goa Powder."

"Oxgall is a substance deposited in Quercus infectoria due to a puncture and ova of Cynips Tinctoria."

"Petrolatum makes it a softer *constituency.*"

"Oxgall is from the element Cerium by interaction."

"Fel Bovis is from the active principle of the cow or the ox."

"Acetphenetidinum is a white, *crystalline,* amorphous powder."

"Punica Granatum is Pumice Stone."

"A Compound of Chlorine and Calcium Hydroxide is Lime Water."

"Some drugs are easier to *commute* before they are dried."

"The chief contituent of Aloes is *trunk branches.*"

"Chloroform and Ether are both liquids having a choking sensation."

"Thymol Iodide has a *strong, viscid odor.*"

"Cocaine, in solution, is colorless with *toxicating taste.*"

"Aspidium contains *Cornutine,* Filicin, *Aspidospermine,* and Filicic Acid."

"Opium is obtained from Coco Beans."

"Opium is obtained from Papavia from incisions of *bark* and *trunk.*"

"The Poppy is spliced and Opium removed a mass."

"Opium comes from the *seed* of *Popa* heads."

"Rhamnus Purshiana should be kept one year to make sure that the *Amygdalin* is not reacted."

"The concrete milk juice of Lactuca Virosa is the milk of a cow."

"The prepared milk juice of several species of Hevea is *Saccharum Lactis.*"

The following covered a full sheet of legal-cap paper and was given by the candidate in answer to a question as to the proper base to be recommended to a physician for use in Ichthyol Ointment under certain conditions:

"The physician should know these things himself and he should not ask the Pharmacist. He went to college and he ought to know. But, however, I would advise him to use for a base Lanoline Hydrosis and Petrolatum, because Lanoline Hydrosis contains water and that would be the maximum absorption according to my experience, being in the drug business for over 11 years and I have compounded some prescriptions and some Preparations.

"M——— D——— (Name of candidate). Not a registered Pharmacist in any state, but I hope to God I get registered in New Jersey as I am a married man with 2 children.

"This is the 2nd time I am taking the J. B. and I studied very hard."

No doubt the ludicrous side of these will appeal to you first. But, as the seriousness of it presents itself, you will find it hard to believe the answers *bona fide.*

Very many of those taking the examinations are graduates of a college of pharmacy or have had some college training. Yet, nearly seventy per cent. of the candidates fail, despite the fact that the examiners endeavor to make their examinations fair and of a practical character. The more I look into the matter, the more I am

convinced that the system and the character of the instruction given in the college are largely to blame for these failures. Most of the answers show a tendency to memorize a miscellaneous collection of more or less unrelated facts. Candidates come to examiners time after time, saying they have taken this or that course calculated to enable them to pass the State examinations, and want to know what text-book they shall study to be able to pass.

College professors seem content with "parrot" teaching and "parrot" learning from the text-books. Why is this so? Usually, the professors are selected, not with a view of their ability to teach, but because they are more or less successful in some work related to pharmacy or because they are willing to do the work cheaply for the sake of the prestige pertaining thereto.

How many teachers in our colleges of pharmacy have studied even the rudiments of psychology, or possess even the rough psychology that enables many men to rightly judge the mental processes of their associates? How many of these teachers have had any training or even done reading in pedagogics? I doubt if one or two in a hundred could answer "yes."

The result is that the average teacher loses sight of the fact that the students under him are only children of a larger growth, mentally as well as physically; that in them, to a certain extent, there still exists the natural inquisitiveness of the child which makes him acquire knowledge so readily when guided in the proper manner.

The student of to-day has, in his early school training, a much better and broader foundation upon which to build his later technical training than had his predecessors. It is the duty of the technical instructor to establish points of contact with this earlier knowledge, and upon it, with the aid of the student's natural inclinations, build a solid structure of knowledge, or, rather, assist the *student* to build such a structure.

He cannot do this by "cramming" *dead* facts into his students. He must, rather, stimulate them by such a *live* presentation of his subject that the student will acquire the facts for himself in the manner best suited to his individual mentality.

If this is done we shall have candidates who can *reason* answers for themselves, and can explain their text-book definitions when they use them. In other words, their knowledge will have become part of them, to be used as a means for further advancement—to what heights, who can tell?

VITAMINES AND NUTRITIONAL DISEASES.[1]

A Stable Form of Vitamine, Efficient in the Prevention and Cure of Certain Nutritional Deficiency Diseases.

By Atherton Seidell, Hygienic Laboratory.

According to the recently developed conceptions of nutritional deficiency diseases, particularly beriberi and pellagra, a factor, hitherto unrecognized, must be taken into consideration in respect to the essential food elements necessary for normal metabolism. This constituent has been given the name " vitamine," and this term now expresses the idea that in addition to the usual proteins, fats, carbohydrates, etc., contained in ordinary foodstuffs there must be present also a sufficient amount of vitamine in order that normal metabolism be maintained.

It is recognized that although vitamines undoubtedly are widely distributed in food products, they occur for the most part in very minute amounts, and the various foods differ in the proportions which they contain. In the case of an ordinary mixed diet a supply of vitamines ample for the needs of the organism will no doubt usually be present. On the other hand, if the diet is made up principally of foods poor in vitamines or rendered so by their preparation, it would be expected that an insufficient amount of these substances would be provided and that abnormal metabolic processes would result. The studies which have been made on beriberi, and especially on polyneuritis in fowls, have definitely established this conception of the rôle of vitamines in metabolism.

In all attempts which have so far been made to isolate vitamines in sufficient quantities for experimental studies, only very small yields have been obtained. This has been due to the apparent destruction of the physiologically active substance during the various steps of the several processes employed. On this account it has so far not been possible to make convincing demonstrations of the specific function of isolated vitamines in nutritional deficiency diseases of human beings. It was in the hope of developing an efficient procedure for obtaining a relatively concentrated and comparatively cheap form of vitamine, suitable for studies on the prevention and cure of such human nutritional deficiency diseases as beriberi, pel-

[1] Reprinted from the *Public Health Reports*, vol. 31, No. 7, Feb. 18, 1916, pp. 364–370.

lagra, infantile malnutrition, etc., that the following briefly-described experiments were undertaken:

Of the various substances which have been shown to be rich in vitamines, brewer's yeast is probably, at present, the cheapest. In all save perhaps a few of the larger brewing establishments the bottom yeast remaining after each brew is washed down the sewer. This material, therefore, appeared to meet every requirement for cheapness. As obtained from the brewery [2] it is in the form of a light-colored mush. It is first subjected to pressure in a hydraulic press for removal of the beer still retained by it. The press cake is then stirred with ice water and again pressed out. The cake is placed in enamel-ware vessels and brought to a temperature of 37.5° C. and held there for a period of about 48 hours. The autolysis is more or less complete at the end of this time and the material converted to the consistency of thick soup. After cooling to room temperature, the liquid is filtered through large folded filter papers. All methods of filtration involving the use of pressure which were tried, failed. The weight of clear red brown filtrate amounts to approximately 50 per cent. of the weight of the unfiltered material.

This filtered autolyzed yeast contains about 23 per cent. of total solids, determined by evaporation in a vacuum desiccator. It will keep in a cool place, without noticeable change, for several months, possibly much longer. If administered in 1 Cc. doses on alternate days to a pigeon kept on an exclusive diet of polished rice, the pigeon does not lose weight nor show symptoms within at least two months, the period during which the present experiment has been under way. A pigeon kept on polished rice without the yeast filtrate begins to lose weight usually within the first five days and dies with the typical paralysis of polyneuritis within about 20 days. If 1 Cc. of the yeast filtrate is given to completely paralyzed pigeons a relief of the paralysis will occur within an hour and to all outward appearances the pigeon will be restored to a normal condition within 12 hours.

Although this yeast filtrate is evidently very active and has good keeping qualities, an effective dose for a man, as estimated from the amount required for pigeons, would be about 200 Cc. It was therefore realized that the material would have to be considerably concentrated before it could be successfully used in human cases.

[2] Acknowledgments are due the Christian Heurich Brewing Company, of Washington, for the very liberal supplies of yeast used in the present investigation.

The procedures originally employed for concentrating the yeast filtrate included vacuum distillation, evaporation in a current of dry air, and freezing and removing the ice by centrifugation according to the method perfected by Mr. H. C. Gore, of the Bureau of Chemistry, for concentrating cider and fruit juices. Although a portion of the dissolved solids separated during the concentration and could be removed, the resulting concentrated liquid became more and more syrupy and it was impossible to convert the material to a solid condition. The use of alcohol for precipitating the inactive material from the very concentrated solution was at first thought to be a practical step, since an easily removed granular product was obtained. On concentrating the alcoholic filtrate from this product and estimating its activity by experiments on neuritic pigeons it was found that a considerable loss of the active constituent had occurred. An examination of the solid precipitated by the alcohol showed it to be quite active; hence a distribution of the vitamine had taken place. It was therefore apparent that the use of alcohol for concentrating the vitamine in yeast filtrate was not a practical procedure from an economic standpoint.

After experiments with a number of other procedures had failed to yield satisfactory results, attention was turned to the possibility of using a medium which might exert a selective adsorption for the vitamine. It was shown several years ago by Prof. John Uri Lloyd, of Cincinnati, that certain varieties of fuller's earths could, by proper treatment, be rendered very efficient in the selective adsorption of alkaloids from complex mixtures. It was thought that possibly this material might remove the vitamine from the autolyzed yeast filtrate. Preliminary experiments indicated that such a removal of it could be effected. After beginning the work, there was found a published statement by Chamberlain and Vedder [3] to the effect that the neuritis-preventing substance of extracts of rice polishings is removed by filtering through bone black. This observation strengthened the expectation that a separation of the vitamine from the substances accompanying it in filtered autolyzed yeast could be effected by means of an efficient adsorptive agent.

Through the kindness of Professor Lloyd a large quantity of the especially selected and prepared hydrous aluminum silicate which he uses for alkaloidal separations, and which is known as "Lloyd's Reagent," was sent to the writer. It was decided that in the first

[3] Philipp, *J. Sci.* (B), **6**, 399, 1911.

experiment a relatively large amount of the adsorptive agent should be used. Two hundred grammes per litre of yeast filtrate were therefore selected, and the mixture was thoroughly shaken during about 15 minutes and then filtered through a large Buchner funnel. The filtrate was reserved and the residue pressed out with a spatula and, without washing, drained with air suction as thoroughly as possible. The solid residue was transferred to a vacuum desiccator containing concentrated H_2SO_4 and dried to constant weight.

As indicated in connection with the description of the autolyzed yeast filtrate, there are two methods of determining the activity of a product in respect to polyneuritis—first by the prevention of the onset of the symptoms and second by means of curative experiments. Both methods were employed in the case of the solid, which had been shaken with the autolyzed yeast filtrate, and of the clear liquid recovered after treatment with the solid.

In the case of the curative experiments it was found that a pigeon suffering from severe paralysis, due to an exclusive diet of polished rice, showed unmistakable improvement within an hour after a dose of the solid corresponding to 3 Cc. of the yeast filtrate, and to all outward appearances was normal the next morning. Similar experiments made with the filtrate from the solid showed it to have no appreciable curative action.

The feeding experiments were conducted on a group of 12 pigeons. They were kept in a large cage and given as much polished rice as they would eat. They were weighed and dosed as follows at intervals of two to three days: Two of the pigeons were given 3 Cc. doses of the original yeast filtrate (Y. F.), three received doses of 0.6 gramme of the activated solid (A. S.) corresponding to 3 Cc. of Y. F., three received 3 Cc. doses of the filtrate from the activated solid (F. A. S.), and four were retained as controls.

The results are plotted on a chart accompanying the original paper. It is shown that the pigeons receiving the autolyzed yeast filtrate and the solid activated by being shaken with the yeast filtrate not only showed no ill effects from the exclusive diet of polished rice but actually gained considerably in weight. The controls and those receiving the filtrate from the activated solid all developed the typical paralysis of polyneuritis within from 11 to 23 days. The experiment, therefore, proves conclusively that, using a ratio of 200 grammes per litre, the adsorptive agent removes the vitamine promptly and completely from autolyzed yeast filtrate.

Attention was next turned to ascertaining how small a proportion of the solid reagent would adsorb the vitamine completely from the yeast liquor. This information was considered desirable in order that an activated solid containing as high a concentration of the vitamine as possible might be obtained; one in which doses sufficient for human patients would be contained in amounts of the solid small enough for convenient administration.

An experiment made with the solid and with the filtrate obtained by separating a mixture of only 20 grammes of the reagent to 1 litre of yeast liquor showed that, although the solid was active when given in doses corresponding to 3 Cc. of the original yeast liquor, the liquid filtered from the solid still retained a sufficient amount of vitamine to protect pigeons for periods of over two months when given in 3 Cc. doses on alternate days. From this it is evident that only an incomplete separation had been effected.

The proportion of 40 grammes of solid per litre was next used but the filtrate was found still to be just slightly active. When 50 gammes per litre were used only an inconsiderable amount of vitamine appeared to remain in the yeast filtrate. This, therefore, was considered to be the lowest proportion of solid reagent which could be employed for removing the active material from autolyzed yeast filtrate. A curative experiment made with the filtrate obtained in using 50 grammes solid per litre resulted as follows: A pigeon which was beginning to show weakness indicative of the approach of the paralysis of polyneuritis was given 5 Cc. of the filtrate and the next day showed a very slight improvement. The 5 Cc. doses of the filtrate were continued on alternate days, but the symptoms of polyneuritis developed progressively until typical paralysis, followed by death, resulted on the eighth day succeeding that of the first dose. There was evidently just enough active material in the relatively larger doses of filtrate to delay the fatal termination about one week.

On the basis of the above-described experiments the procedure which has been adopted for preparing activated solid from autolyzed yeast liquor is as follows: To a large volume of clear autolyzed yeast filtrate is added 50 grammes per litre of the colloidal hydrous aluminium silicate reagent as prepared by Professor Lloyd, of Cincinnati, for alkaloidal separations. The mixture is well shaken and allowed to stand several hours until the supernatant liquid is practically free of suspended solid. The dark liquid is then siphoned off and about an equal volume of water and enough standard hydro-

chloric acid is added to yield an approximately N/100 acid solution. The addition of this small amount of acid is necessary to hasten subsidence of the solid. After shaking and allowing to stand, the supernatant liquid is again siphoned off. The solid is washed a second time with the very dilute acid and then poured upon a large Buchner funnel and washed several times with small portions of water and finally with about three small portions of 95 per cent. alcohol. The solid is then spread out on paper to permit the evaporation of the major part of the alcohol and finally dried to constant weight in vacuum desiccators containing concentrated sulphuric acid.

Both preventive and curative experiments on pigeons have been made with this material, and the results agree with those already described, it should be mentioned that much evidence has been ratio of 200 grammes of reagent per litre of yeast filtrate. It has been found that prompt and effective cures of completely paralyzed pigeons result from 0.05 gramme doses of the activated solid, corresponding to 1 Cc. of the original yeast filtrate. Preventive experiments, continued at present for over a month, using 0.05 gramme of the solid on alternate days, show that the pigeon retains its normal health and weight on an exclusive diet of polished rice.

On the basis of 60 kilogrammes as the weight of a man, as compared with 300 grammes for the pigeon, a comparable dose of the activated material would be 10 grammes of the solid on alternate days, or 5 grammes per day. This is a quantity which could be conveniently taken either in capsules or as an aqueous suspension. The material is practically tasteless and odorless, and aside from the vitamine which it contains is an absolutely inert substance which would produce no noticeable effects on passage through the body.

In regard to the probable therapeutic value of the product here described, it should be mentioned that much evidence has been advanced to show that polyneuritis in birds is essentially the same disease as beriberi in man, consequently, it may be expected that the concentrated vitamine may prove to be an efficient remedy for beriberi. That it will be valuable in the treatment of pellagra can not be asserted until clinical tests on human cases have been made; it can only be said that if the source of the vitamine at present selected—*viz.*, yeast—should happen not to be well chosen as regards pellagra, the method here described for concentrating the yeast vitamine probably could be applied equally effectively to some other raw product.

In conclusion it should be mentioned that the procedure here developed for yeast can be used with slight modifications in the estimation of the vitamine content of various food products. Experiments already under way upon the potato have demonstrated the applicability of the method.

QUARTERLY REVIEW ON THE ADVANCES IN MATERIA MEDICA AND PHARMACY.

By JOHN K. THUM, PH.G., Pharmacist at the German Hospital, Philadelphia.

The various state pharmaceutical associations throughout the country have practically all held their usual yearly meetings, and, while nothing of a startling nature was accomplished by any of them, yet, taken on the whole, pharmacy or, rather, the pharmacists of the country seem to be aware of the needs of the profession and are earnestly striving to fill those needs.

At the meeting of the Pennsylvania State Pharmaceutical Association, perhaps the most important need of the profession—and all present seemed to view it that way—is the necessity for a new state narcotic law; one that would reënforce and overcome the shortcomings of the national law. The Committee on Legislation presented a report, embodying what they considered the essential features, which was adopted by the association. Recognition was also given to the fact that one of the prime needs of the profession was a revision of our patent laws, and some safeguarding from the effects of foreign monopolies. To this end a resolution was introduced "asking for a change in the United States patent laws so as to discontinue the patenting of products, but recognizing only applications for patents on processes."

One of the really admirable and extremely valuable features of this state association is its possession of a "Publicity Committee." The work of this committee during the trying times of the last two years, in connection with the fluctuations in prices to the public of medicines, and its successful reaching of the public with information as to the legitimate causes of higher prices, through the medium of the newspapers and magazines, was enthusiastically commented upon and gratefully appreciated by the association. The report of this committee is worth reading. The appointment of such a committee by all state associations, and particularly the American Pharmaceuti-

cal Association, could be used as a good argument for the acquisition of new members. It surely is worth while for the pharmacist to know that whenever any questions arise between him and the public, his state and national associations have the proper function for affording him some measure of protection through the medium of the public press.

Among other things that the Committee on Legislation recommended in its report was that a bill be introduced in the next meeting of the Assembly amending the pharmacy law so that experience gained in a hospital pharmacy be credited; that is to say, that an applicant for registration in the State of Pennsylvania need have only two years' retail experience, provided he or she presents satisfactory evidence that he or she has had two years' experience in a hospital pharmacy conductd by a registered pharmacist. This is a step in the right direction. We hope to see the time when a graduate in pharmacy can be registered solely on work done in a hospital pharmacy laboratory or other manufacturing pharmaceutical laboratory. The opportunities for real pharmaceutical training and development in a hospital pharmacy are greater by far than in the average drug store. Men and women who have this training, who really never had the opportunity for a retail experience, and have never desired it, and yet must be, and desire to be, legally recognized as pharmacists, certainly are as well, if not better, qualified to safeguard the public as one having solely drug experience as acquired in the average retail store.

The suit for libel against the American Medical Association by the Chattanooga Medicine Company resulted in a technical victory for the latter. It will be recalled that the nostrum concern claimed that the charges made by the medical association, as appearing in its official publication, stating that the business of the company was built on deceit and its preparation a vicious fraud, were untrue and libellous; it therefore sued for damages to the extent of $300,000. The jury, after deliberating for a week, brought in a verdict for the medicine company and placed the damages at one cent. As the *Journal of the A. M. A.* puts it, "Technically guilty; morally justified."

It is of interest to know that the Supreme Court of the United States has decided that an advertiser is guilty of fraud if he misrepresents his goods and through such misrepresentation inveigles any one to buy or invest. This decision, it seems to us, is going to have a far-reaching effect on all kinds of business concerns and

ventures that depend largely upon advertising for reaching the public. It also means that there will necessarily be considerable revision of the literature indulged in by "patent-medicine" concerns. That there is a real need for reform along the lines of truth and common ordinary honesty in business in general must be admitted by all who have any vision and foresight whatever. Indeed, the action of the Supreme Court is in itself sufficient recognition of just such a need.

The periodic discussion as to the desirability and value of a more general use of the metric system in this country has again made its appearance. There really is no argument among thinking people as to the desirability of its more general use or, for that matter, its sole use; especialy the advantage to those of our merchants who are after foreign trade, for be it known that the people from other countries, and especially those south of us, are familiar with only one system of weights and measures, and that is the metric system. Next to our lack of banking facilities in South America, our non-use of the metric system is deemed by many observers as one of the main reasons why our trade with that section of the world does not begin to compare with that of the other countries of the world; and when one considers our close proximity to that fertile field for the development of commercial relations and trade, and the advantage such proximity gives us, it is really very surprising that our business men have not bestirred themselves before this. The introduction of the following bill augurs well for a more general use of this system of weights and measures, and the business men of the country should give it their earnest support.

"A Bill to adopt the weights and measures of the metric system as a standard weights and measures in the United States.

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That on and after the first day of January, 1918, all the departments of the government of the United States in the transaction of all business requiring the use of weight and measurement, except in completing the survey of public lands, shall employ and use only the weights and measures of the metric system; and on and after the first day of January, 1920, the weights and measures of the metric system shall be the legal standard weights and measures of and in the United States."

Thymol still continues to remain at a top-notch price, and yet this should not be, as this country possesses the means of what should be the main source of thymol production in this section of the world.

It will no doubt be remembered that the main source of thymol manufacture for many years has been the oil from ajowan seed. The fact that this plant is indigenous and cultivated in India, and also in the countries just west, as well as in Egypt, accounts for the scarcity of thymol, with its consequent high price. The disordered state of the shipping transportation facilities due to the European war is accountable for the scarcity and elevated prices of many things that civilization has hitherto been used to. This is, in large measure, undoubtedly the main reason for the scarcity of thymol in this country. It has been known for some time—in fact, the literature on the subject of thymol mentions it—that the wild horsemint, which grows so plentifully in certain sections of this country, could be utilized very readily as the source of thymol, as the volatile oil from this plant contains at least 60 per cent. of thymol. It has just been pointed out by the United States Department of Agriculture that the commercial production of thymol in this country is possible, and it mentions the fact that horsemint would yield it in sufficient quantity to make its manufacture a profitable venture. As a result of the department's investigations, which, by the way, have been published in Bulletin 372, it feels justified in stating that it will thrive under cultivation wherever it may be found growing wild; it also believes that a plantation of this plant would not have to be replanted oftener than once in five years, and possibly under good conditions may continue to give a good yield for a longer period of time. This bulletin contains considerable information and should be of great practical value to those who may find their way clear to developing the possibilities of the thymol industry in this country.

Sodium Hydroxide to Destroy Anthrax Spores on Skins and Hides.—A one-half to one per cent. solution of sodium hydroxide destroys the spores of *Bacillus anthrax* at a temperature of from 15° to 20° C. It has been discovered that when infected hides or skins have been immersed for a period of 72 hours in such a solution, all the anthrax spores are killed. It was also noticed that the germicidal action of the solution was greatly increased if from 5 to 10 per cent. of sodium chloride was dissolved in the solution. It has also been found that treatment of the spores with sodium hydroxide before pickling has the advantage that soaking, liming, and disinfecting may be done in one process. It is also necessary that the weight of the dilute caustic alkali used be at least ten times the weight of the hides and skins under treatment. (*Chem. Abstr.*, 1916, 10, 985.)

ACIDITY OF NORMAL PANCREATIC SECRETION.—The authors have done additional work, which confirms their original statements as to the acidity of the pancreas. They worked with pancreatic glands of sheep, hogs, and oxen, and many other animals. In all cases they found the secretion of the pancreatic glands decidedly acid. Variations due to season were not apparent; the acidity remains the same at all seasons of the year. They also worked over other organs of various animals to determine the reaction of the secretions from the parotid gland, the liver, and the spleen, and found them all to be acid, but not so much so as the secretion from the pancreas. The bile was slightly alkaline or neutral, and the thyroid neutral. They found the pancreatic secretion very rich in phosphates; sulphates and traces of chlorides were also found. Potassium seemed to be the most abundant metal present. They state that the acidity, which is greater than that of any other organ, is due to acid phosphates and acid nucleoproteins, alkali salts of which are also present. (*J. Amer. Chem. Soc.*, 1916, 38, 1115, by J. H. Long and F. Fenger.)

ESTIMATION OF ALKALOIDS BY THE HYDROCHLORIDE METHOD.—The alkaloid is extracted with the aid of ether; the ethereal solution is then subjected to the action of dry hydrochloric acid gas, which precipitates the alkaloid as hydrochloride; evaporation of the ether is then carried out with subsequent weighing of the salt. The salt is then dissolved in water and titration of hydrochloric acid with standard alkali performed, using phenolphthalein as the indicator. It is claimed that by this method very good results have been obtained in the estimation of conium seeds; in this case the alkaloid was estimated as coniine monohydrochloride; like results were obtained in estimating tobacco and colchicum root. It is interesting to know that in all these cases the hydrochloride of the alkaloid separated, in part, as a crystalline solid and as an oil, when the ethereal solution, without color and free from fat, was treated with gaseous hydrochloric acid. What this oil is, is not yet definitely known, but it might possibly be a higher monohydrochloride. When the oil is washed with cold ether until free from free hydrochloric acid it still fumes in moist air; placed in a vacuum desiccator with some solid potassium hydroxide, it is changed into the monohydrochloride. (*Jour. Ind. and Eng. Chem.*, 1916, 8, 48, through *The Analyst*, May, 1916.)

FAT OF NUX VOMICA.—It has been estimated that nux vomica seed contains from one to two per cent. of solid fat, and that this

consists mainly of glycerides of capric, caprylic, caproic, butyric, and palmitic acids. A specimen of this fat showed a dark-brown color, had a rather unpleasant smell, and gave these values: Sp. gr. at 100°/15.5° C., 0.892; solidification-point, 60° C.; acid value, 33.7; saponification value, 152; Reichert-Wollney value, 1.0; iodine value (Hubl), 54, and acetyl value, 31.2. (*Jour. Soc. Chem. Ind.*, 1916, 35, 201, through *The Analyst*, May, 1916.)

Etiology of Common Colds.—It is stated that there exists experimental evidence which seems to prove that the infection of what are popularly known as common colds, of a certain type, are due to a virus developing in the nasal secretions, and which is also able to pass through a Berkefeld filter impervious to ordinary bacteria. Transference of the infection from one person to another probably happens from droplet infection, or by means of direct or indirect contact. Culture experiments seem to show that a virus from the nasal secretions of persons ill with an acute cold will develop, on cultivation, subcultures which, after passing through the Berkefeld filter, reproduce colds experimentally. While it cannot be definitely stated that a specific organism has as yet been isolated, the results seem to show that such organisms exist. (*Jour. Amer. Med. Assoc.*, p. 1180, 1916, by G. Foster, M.D.)

Russian Aconite.—*Aconitum orientale* grows wild in profusion in the Crimea and in Bessarabia. It is characterized by having a rather small, compact, grayish-black root with a transverse section similar to that of *Aconitum Napellus*. Its taste is said to be hot and acrid. When treated by a process which gave 0.0526 per cent. of crystalline aconitine from a sample of powdered root of *Aconitum Napellus*, the dried root of *Aconitum orientale* yielded 2.207 per cent. of total alkaloids, although in an amorphous condition. This awaits further investigation. (*Jour. Pharm. Chim.*, 1916, 13, 329.)

Chemical Standardization of Aconite Tincture Useless.—The alkaloidal standardization of tincture of aconite by the method advised in the Pharmacopœia, which consists of determining the ether-soluble alkaloid, which, in turn, is titrated as aconitine, is considered by this investigator as not only useless but also sufficiently misleading as to be more or less dangerous. He states that the only reliable method of standardizing the activity of any of the aconite preparations is by a uniform biological method. He found that the lethal dose for a guinea-pig is really the most convenient and satisfactory method for arriving at a standard. He worked with four

different tinctures, each having an aconitine content of 0.04298, 0.04183, 0.04183, and 0.04093 grammes in 100 mils; these were very near to the pharmacopœial requirement, which is 0.045 gramme in 100 mils. Yet upon biological examination they all showed a tremendous difference in activity. Placing the lethal dose of the first as 1, that of the others was respectively, 1.97, 1.97, and 7.27. It can be readily seen that the first tincture was easily more than seven times as strong as the last. No evidence was obtainable which might have explained the difference as due to deterioration of the tinctures. Each preparation was made on the same date. (*American Druggist*, 64, 129, 1916, by C. C. Haskell.)

CIGNOLIN, A NEW CHRYSAROBIN SUBSTITUTE.—1-8-dioxyanthranol, blessed with the fanciful name of "Cignolin," is handed to the medical profession as a wonerful substitute for our old friend "chrysarobin" in the treatment of skin diseases. It is described as a yellow powder, easily soluble in fats, alcohol, acetone, and benzene. Petrolatum alba is supposed to be a most satisfactory base for its application in ointment form. When exhibiting it in this manner it should be first rubbed smooth with a few drops of some bland oil. (*Dermatolog. Woch.*, 1916, 133.)

ANTIMONY FROM ALASKA.—Large quantities of stibnite ores are being worked in the Fairbanks district and the Seward Peninsula, in Alaska, the high prices being offered for antimony undoubtedly being the cause of such unusual activity in these mining regions. The total shipment of ores containing antimony from Alaska during 1915 was valued at over $170,000. This ore contained at least 50 per cent. of antimony. The great demand for this metal has increased prospecting for the ore. Stibnite is by no means uncommon in this region of the world, and the new industry will no doubt show considerable development. (*Mining Jour., Jour. Ind. Eng. Chem.*, 1916, 8, 376.)

STRAMONIUM LEAVES FROM SOUTH AFRICA AND THE SUDAN.—A specimen of *Datura Stramonium* leaves from South Africa has been examined at the Imperial Institute and found to contain 0.54 per cent. of total alkaloids, calculated on the dry material, which is in excess of the amount usually present in the European drug. The chief alkaloid present was hyoscyamine. A sample of the same drug from the Sudan in the form of mixed stems, leaves, and capsules gave only 0.13 per cent. of total alkaloids. Another sample of seeds from the latter place gave only 0.096 per cent. of total alkaloids, whereas the yield from European seeds is from 0.21 to 0.48 per cent. In view of

the higher yield of hyoscyamine obtainable from Egyptian *Hyoscyamus muticus,* it is not likely that South African stramonium would prove a remunerative source of hyoscyamine or of atropine. However, if the leaves were shipped to this country in a well-dried condition, of good color and of the present alkaloidal value, they could readily be used for other purposes. (*Bull. Imp. Inst.,* 1916, 14, 21.)

SOLUBILITY OF NAPHTHALENE IN AMMONIA.—Naphthalene is soluble in solution of ammonia of 5 per cent. strength in NH_3 to the extent of 0.030 Gm. per 1000 Gms. of liquid; in 10 per cent. solution of ammonia, 0.042 Gm. per 1000 Gms.; in 25 per cent., 0.064; in 100 per cent., 33.0 per 1000 Gms. These figures are obtained at 0° C. At 25° C. they respectively are: 0.044, 0.074, 0.162, and 120.0 Gms. in 1000 Gms. If the solution of ammonia contains 2 per cent. of pyridine, the solubility of the naphthalene is increased by 0.082 Gm. at 0° C., and by 0.245 Gm. at 25° C. Phenol does not influence the solubility. A stream of carbon dioxide passed into 25 per cent. solution of ammonia containing dissolved naphthalene causes the greater part of the latter to be thrown out of solution. The distillation of solution of ammonia containing naphthalene in solution results in blocking of the condenser tubes unless these are kept at a temperature not lower than 30° C. (*Zeitsch. angew. Chem.,* 29, 1916, by S. Hilpert.)

ESTIMATION OF NAPHTHALENE IN AMMONIA.—A definite quantity of the solution is cooled in water (iced), neutralized by the gradual addition of sulphuric acid, the cooling being maintained during the process. The liquid is then distilled and 30 mils of distillate collected. This is then extracted with ether, and the condenser rinsed out with the liquid; at this point the mixed ethereal solutions are treated with excess of N/20 solution of picric acid. At the end of two minutes the ether is evaporated under pressure, the residual aqueous solution is cooled in ice-water, the precipitate collected on a filter, washed with 5 mils of ice-water, and titrated with N/10 solution of sodium hydroxide, using litmus as an indicator. (*Zeitsch. angew. Chem.,* 29, 1916, by S. Hilpert.)

ALCOHOL FOR RETARDING THE SETTING OF PLASTER OF PARIS.—It has been shown that the addition of alcohol in varying proportions to the water employed for slaking the plaster has a very marked effect in retarding the time of setting and in lessening the degree of heat involved in the reaction. This effect is directly proportional to the quantity of alcohol used. In round numbers, the addition of 10 per cent. of alcohol doubles the period of time required for the

setting of plaster of Paris for surgical purposes. For instance, 10 grammes of plaster of Paris slaked with 60 mils of water took fourteen minutes to set; with the addition of 10 per cent. of alcohol, thirty minutes were required, and with 25 per cent., an hour. Since alcohol is always at hand in the pharmacy, it is more convenient to use than such articles as powdered marshmallow, acacia, tragacanth, or flaxseed mucilage. This plan of using varying proportions of water and alcohol enables the surgeon to have a plaster-of-Paris cast set at any desired time. (*The Pharm. Jour. and Pharmacist,* May 6, 1916.)

Idiosyncrasy to Acetylsalicylic Acid.—This physician speaks of three cases from his own practice and mentions seventeen cases that he found in literature in which the administration of acetylsalicylic acid was followed by œdema. The doses ranged all the way from 0.3 to 1 gramme, and the pathological reaction occurred always after the first dose, notwithstanding the amount taken. The author thinks some instability of the vasomotor system appears to be responsible for the trouble, while in certain cases some favoring factors were probably application of local heat, fear of poisoning, a preëxisting infection, or other coöperating cause. (A. Klercker, *Hygeia,* Stockholm, through *Jour. Amer. Med. Assoc.,* April 15, 1916, p. 1282.)

Pharmacologic and Clinical Study of Papaverin.—According to the investigator, this alkaloid was found to have some very interesting pharmacological properties. The most prominent among these are its effect on the heart and blood-pressure, its action on the coronary circulation, its stimulating effect on the respiration, its relaxing and tonus-lowering influence on the smooth muscle structures, and its remarkable analgesic power. These, together with its comparatively low toxicity, prompted its employment for therapeutic purposes. All the clinical experiences described favor its use, and the author hopes that further observation be carried out to determine its exact therapeutic value in medicine. (*Archives of Internal Medicine,* Chicago, June, Part I, xvii, No. 6, 1916, by D. I. Macht, Baltimore.)

Emetine Salts and Pyorrhœa Alveolaris.—The amœbicidal action of emetine hydrochloride is admitted by this author, yet he is unable to confirm the various statements appearing from time to time that this salt is an absolute remedy for Pyorrhœa alveolaris. In his experience he found that the alkaloidal salt by itself will not cure this disease. Out of a series of 78 cases, all showing endamœbæ, none lost their endamœbæ permanently. The gums and teeth in three cases

were greatly improved, but only moderately so in nine cases; only slight improvement was noticed in 23; 40 cases remained the same; in two cases the results were doubtful, and in one the patient became worse. All that were without endamœbæ at the end of the treatment soon became positive again in various periods, ranging from two weeks to four months, and in spite of the continuous use of a solution of ipecac as a mouth-wash. (J. S. Ruoff, AMER. JOUR. PHARM., 1916, p. 164.)

SOME FALLACIES REGARDING PHENOL.[1]

A REVIEW WITH REPORTS OF OBSERVATIONS ON THE INFLUENCE OF ETHYL ALCOHOL ON THE GERMICIDAL AND ON THE TOXIC PROPERTIES OF PHENOL.

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(Concluded from August issue.)

In the appended tables, which are continued from p. 371, an effort has been made to include only the essential information recorded in the protocols. The dose per mouse and dose per gramme of mouse represent the weight of phenol in the solutions used.

TABLE A.

One Per Cent. Phenol in Water.

Mouse No.	Weight	Approximate amount of 1 per cent. solution of phenol per mouse	Phenol per gramme weight of mouse	Result	Time	
	Grammes				*H.*	*m.*
298	16.4	0.427	0.00026	Survived	..	..
299	19.65	.512	.00026	Survived	..	..
300	18.5	.582	.00032	Survived	..	..
301	19.85	.632	.00032	Survived	..	..
302	18.75	.712	.00038	Died		..
303	20	.761	.00038	Survived	..	3
304	19	.875	.00046	Died	1	0
305	20.4	.958	.00046	Died	20	04

[1] Reprint from the *Public Health Reports*, vol. 31, No. 17, April 28, 1916, pp. 1046–1054.

TABLE B.

One Per Cent. Phenol in Distilled Water (Containing 3 C. C. of 95 Per Cent. Alcohol Per 100 C. C. Solution).

Mouse No.	Weight	Approximate amount of 1 per cent. solution of phenol per mouse	Phenol per gramme weight of mouse	Result	Time	
	Grammes				*H.*	*m.*
306	16.75	0.437	0.00026	Survived	..	..
307	19.7	.513	.00026	Survived	..	..
308	18.5	.582	.00032	Survived	..	..
309	19.9	.637	.00032	Survived	..	..
310	18.9	.719	.00038	Survived	..	..
311	20.1	.765	.00038	Died	3	45
312	19.05	.877	.00046	Died	1	30
313	21	.966	.00046	Died		45

TABLE C.

One Per Cent. Phenol in Distilled Water (Containing 9 C. C. of 95 Per Cent. Alcohol Per 100 C. C. Solution).

Mouse No.	Weight	Approximate amount of 1 per cent. solution of phenol per mouse	Phenol per gramme weight of mouse	Result	Time	
	Grammes				*H.*	*m.*
370	16.60	0.432	0.00026	Survived	..	..
371	20.95	.545	.00026	Survived	..	..
372	18.25	.583	.00032	Died	..	35
373	21.65	.693	.00032	Died	10	20
374	19.95	.758	.00038	Died	10	15
375	23.35	.887	.00038	Survived	..	..
376	20.75	.955	.00046	Died	3	30
377	25.60	1.176	.00046	Died	5	0

CURRENT LITERATURE.

FRAUDULENT INFANTILE PARALYSIS "CURES."

Officials of the Department of Agriculture charged with the enforcement of the Food and Drugs Act expect that the outbreak of infantile paralysis will tempt unscrupulous persons to offer for sale so-called "cures" or remedies for this dread malady. They, therefore, have issued special instructions to the Food and Drugs

TABLE D.

One Per Cent. Phenol, 1 C. C. Glycerin in 100 C. C. Solution (Distilled Water).

Mouse No.	Weight	Approximate amount of 1 per cent. solution of phenol per mouse	Phenol per gramme weight of mouse	Result	Time	
	Grammes				*H.*	*m.*
330	16.2	0.422	0.00026	Survived	..	..
331	19.15	.498	.00026	Survived	..	..
332	16.8	.538	.00032	Survived	..	..
333	19.55	.625	.00032	Survived	..	..
334	17.2	.654	.00038	Died	..	25
335	21.1	.802	.00038	Survived	..	..
336	17.5	.805	.00046	Died	1	15
337	23	1.06	.00046	Died	3	30

TABLE E.

One Per Cent. Phenol in Water (Mice had been Injected the Day Before with Varying Amounts of an 18 Per Cent. Solution of Ethyl Alcohol).

Mouse No.	Weight	Approximate amount of 1 per cent. solution of phenol per mouse	Phenol per gramme weight of mouse	Result	Time	
	Grammes				*H.*	*m.*
378	16.95	0.543	0.00032	Survived	..	..
379	18.35	.588	.00032	Survived	..	..
380	18.95	.721	.00038	Died	3	0
381	20.45	.780	.00038	Survived	..	..
382	21.05	.968	.00046	Died	20	0
383	20.65	.950	.00046	Died	35	0

Inspectors to be particularly alert for interstate shipments or importations of medicines, the makers of which allege that they will cure or alleviate this disease, for which, at the present time, no medicinal cure is known. The officials also warn the public that any preparation put on the market and offered for sale as being effective for the treatment of infantile paralysis should be looked upon with extreme suspicion. Inspectors, accordingly, have been instructed to regard as suspicious, and to collect samples of, all medicines in interstate

commerce for which such claims are made. Makers of such fraudulent remedies will be vigorously prosecuted whenever the evidence warrants action under the Sherley Amendment to the Food and Drugs Act. So-called remedies for infantile paralysis which are offered for import into the country will be denied entry.

The Food and Drugs officials are particularly watchful in this instance because it has been noted in the past that whenever a serious epidemic exists unscrupulous dealers prey upon the fear or ignorance of the public by flooding the market with worthless, hastily prepared concoctions, for which they assert curative properties which have no foundation whatever in fact. In the present instance, inspectors already have discovered shipments of a few such mixtures.

The Department will do everything it can under Federal law to protect that portion of the public which is extremely credulous in times of panic and which will grasp at anything which promises protection or relief. The sale of such products at this time, the officials point out, is particularly threatening to the public health because many persons, relying on the false statements of impostors, neglect to secure competent medical advice. As a result, not only is the safety of the patient endangered, but, in the absence of proper sanitary precautions, the likelihood of contagion is greatly increased.

It must be understood, however, that the Federal Food and Drugs Act applies only to products which are shipped in interstate commerce, that is, from one State to another, or which are offered for import or export, or which are manufactured or sold within a territory or the District of Columbia. Products which are made and consumed wholly within a single State are subject only to such State laws as may apply and are under the control only of State health officials. The Federal law does not apply, for instance, to patent medicines made within the State of New York and sold in New York City. Persons buying or using a " remedy " made in their own State, therefore, must rely on the protection accorded them by their local health authorities.

Benzoic Acid Adulterated.

Recent examinations by the chemists engaged in the enforcement of the Food and Drugs Act of shipments of benzoic acid offered for entry into the United States have revealed that much of it is adulterated with boric acid. This adulteration is probably due to the

high price which benzoic acid now commands, owing to its scarcity. It is quoted at about eleven dollars per pound, while the price of high-grade boric acid is only twenty to twenty-five cents per pound. As some of the shipments of benzoic acid have been found to contain as much as thirty per cent. boric acid, the enormous profit in this form of adulteration is apparent.

The officials in charge of the enforcement of the Food and Drugs Act are of the opinion that benzoic acid containing boric acid is adulterated, and that shipments of such a mixture offered for entry into the United States should be denied admission under the Food and Drugs Act.

Drug Cultivation in New South Wales.

J. H. Maiden, F.R.S., F.L.S., Government Botanist and Director of the Botanic Garden, Sydney, states that the scarcity of crude drugs, due to the European war, has led the Australian Government to investigate the possibilities of cultivating several medicinal plants on its island-continent.

Like our own government, it has urged prospective growers to use precaution because of the possibilities of overstocking the market or producing an inferior drug. Technical knowledge is necessary concerning the seeds, propagation, soil, harvesting, etc.

The government, through experience, realizes the limitations of Australia in drug growing, and its advice is not to try to compete with other countries in growing cocoa, rubber, tea, cinchona, and jute. However, the following drugs should be grown successfully: Lobelia, broom, belladonna, digitalis, dandelion, chiretta, rue, horehound, aconite, squill, and savin.

C. J. Zufall.

Quebracho, Concession Asked for Plant in Paraguay.

Consul S. H. Wiley, Asuncion, representative of American capitalists, petitioned the Paraguayan Congress on July 6, 1916, to grant a concession for the erection and operation of a plant for the manufacture of extract of quebracho in Paraguay.

The most important concession asked is a reduction of the export duty on the extract of quebracho from $9.65 to $0.96 per ton, when the value of the extract does not exceed $96.50 per ton. When the market price on the bourse of Buenos Aires shall exceed this amount an *ad valorem* duty of 4 per cent. shall be paid on the excess. In addition to this, the concessionaire asks for exemption from import

duty of machinery and other material used in constructing and maintaining his plant.

In consideration for the granting of the concession, the concessionaire agrees to advance the sum of $482,000 as a loan to the Paraguayan Government. The concessionaire also binds himself to produce not less than 15,000 tons of quebracho extract per annum.

C. J. Z.

New Zealand Government to Sell Kauri Gum.

Consul General Alfred A. Winslow says that under the law authorizing the Minister for Lands to enter into contracts for the purchase of equipment for the extraction and treatment of kauri gum and the acquisition of supplies of the resin (see *Commerce Reports* for December 1, 1915), the New Zealand Government expended $131,440 for plant and stocks during the fiscal year 1915–'16. An agent in the United States, with headquarters in New York City (address obtainable from the Bureau of Foreign and Domestic Commerce or its district and coöperative offices upon asking for file No. 78,948), has been appointed to distribute the gum taken over by the government, and it is said that large stocks are in hand ready for the market. A government representative is now in the United States completing arrangements, having with him samples of the different grades for which orders may be taken, with the idea that the grades shall be guaranteed. It is also stated that the representative is in position to enter into contracts for large quantities covering any reasonable period and to guarantee delivery.

The New Zealand Government owns about 35,500 acres of excellent kauri forest, said to contain at least 15,000,000 feet of kauri lumber, which may be made to realize at least $45,000 per annum by bleeding these trees as rubber trees are bled. It is thought this tapping can be done for centuries if the forests are carefully treated. The exports of kauri gum from New Zealand in 1915 amounted to 4575 tons, valued at $1,358,401, against 8473 tons, value $2,420,811, during 1914; and up to March 10, 1916, the exports totalled 1096 tons, valued at $313,286. The United States not only takes the largest quantity of any country, but it also buys the most expensive grades, the average price per ton of the kauri gum taken by the United States being $333, contrasted with $264 for the United Kingdom.

SOME INSTANCES OF HOW THE PHARMACIST SERVES THE PUBLIC.

The value to the public of the educational bulletins issued by the Publicity Committee formed a very important topic for discussion at the recent meeting of the Pennsylvania Pharmaceutical Association at Reading. That the public is taking a keen interest in this work was emphasized by the numerous letters which have been received from residents of our own as well as other States regarding the cultivation of medicinal plants. Information regarding the kind of " weeds " which can be profitably grown by our country neighbors is best obtained from the Bureau of Plant Industry, Department of Agriculture, Washington, D. C.

President Campbell, in his address, recommended a mid-year meeting of the association in Harrisburg, should it become necessary to convince the Legislature of the need of proper pharmacy laws to safeguard the public It would be wise to have laws which will make it compulsory that all medicines sold in Pennsylvania should be put up under the supervision of registered pharmacists. The State already passes upon the ability of the registered pharmacist by compelling him to be a graduate of a reputable college of pharmacy, in addition to passing the very comprehensive examination of the State Pharmaceutical Examining Board. Such laws would help materially to prevent the sale of medicines, such as are frequently compounded by fakers and sold from house to house by many who have not even an elementary knowledge of pharmacy or medicine. The public should fight shy of purchasing cure-alls from wayside peddlers unless they bear the imprint of a properly qualified pharmacist or pharmaceutical concern.

The " high cost of being sick " naturally came into much prominence in the discussions. One fact particularly was brought out to show that the high cost of many chemical substances was due largely to the United States patent laws, which grant an inventor the sole right of manufacture for a period of 17 years. Our laws should be so modified that a manufacturer from any other country, who obtains a patent on a medicinal substance, should be compelled to arrange for its manufacture in this country within a reasonable time after the granting of the patent. We would then not find ourselves in the predicament which now confronts us, viz., being willing to purchase, but unable to obtain on account of conditions brought about by the war.

Nearly every one will realize the importance of protecting the "dye industry." Dyes have become scarce since the war began, and will become even scarcer as war continues. American capital is willing to engage in this industry if the government will enact protective laws which would prevent ruinous competition from abroad as soon as the war is over. Any dye factory erected in this country would become a potential factor of preparedness for our country, because the machinery so employed could readily be used for the manufacture of those basic substances necessary in the manufacture of explosives, should it become necessary.—*Pennsylvania Pharmaceutical Association Publicity Committee.*

A DIGEST OF U. S. P. CHANGES.

In order to show the busy pharmacist at a glance the important changes which have been made in the Ninth Revision of the U. S. Pharmacopœia, and to have this information on hand for ready reference, the H. K. Mulford Company, of Philadelphia, has prepared a list of the important pharmaceutical changes on a convenient card which can be posted in a conspicuous place in the prescription laboratory. This list is arranged in four columns and divided into chemicals, drugs, and preparations. Each pharmacopœial substance which has had its standard changed is placed under one of these three headings, and in the three adjoining columns the following information is given: The Eighth Revision Standard, The Ninth Revision Standard and Remarks on the Changes.

Thus, for instance, if one desired to know whether there had been any change in the standard for Extract of Nux Vomica, it would only be necessary to look under the heading of preparations, the sub-heading extracts, and then look for Nux Vomica in the regular alphabetical order. The information there given is that, according to the U. S. P. Eighth Revision, Extract of Nux Vomica contained 5 per cent. strychnine. According to the U. S. P. Ninth Revision, the same extract contains from 15.2 to 16.8 per cent. alkaloids from Nux Vomica. The remarks on the change are "standard now refers to total alkaloids and limits are given."

Of course, this list is for quick reference only, and full information must be sought in the Pharmacopœia itself. However, it is hoped that pharmacists generally will find such a ready reference of important changes both time saving and convenient. This card can be secured on application to the H. K. Mulford Company.